

Claims

- [c1] 1. Device for engine breaking in motor vehicles comprising an internal combustion engine with at least one cylinder, at least one exhaust gas valve at said cylinder and a rocker arm (4) for activation of said exhaust gas valve which rocker arm (4) is arranged on a hollow rocker arm shaft (5) and arranged to be affected by ridges (2a, 2b, 2c) on a camshaft (2), said device additionally comprising:
- a control valve (15, 16) for controlling the oil pressure in said rocker arm shaft (5), and
- means (6; 14), receptive to an increase of oil pressure in said rocker arm shaft (5) and integrated in said rocker arm (4) for absorbing play between said rocker arm (4) and said exhaust gas valve at increased oil pressure, with at least one of said ridges (2b, 2c) then causing opening of the exhaust gas valve with an engine breaking effect, wherein said control valve (15) comprises a controllable valve body (18, 19) and a canal (23) between the valve body (18, 19) and the rocker arm shaft (5) which comprises a controllable outlet (36), with the valve body (18, 19) being arranged to be positioned in a first position with a pressure reducing effect, and a second position without a pressure reducing effect.
- [c2] 2. Device according to claim 1, wherein the control valve (15, 16) is arranged for said control of oil pressure depending on a

signal generated when there is a need for gear shifting of a gearbox associated with the engine, with said valve body (18, 19) being arranged to be positioned in said first and second position respectively, depending on said signal.

[c3] 3. Device according to claim 1, wherein a control valve (28) is arranged in connection to said controllable outlet (36), and is arranged for opening alternatively closing of said outlet (36).

[c4] 4. Device according to claim 3, wherein said control valve (28) is arranged to assume two states:
a first state where the outlet (36) is open, with the canal (23) communicating with a chamber (22), the oil content of which exerts a force against the valve body (18, 19) which corresponds to said first position of the valve body (18, 19),
and
a second position where the outlet (36) is closed, with said chamber (22) communicating with a drainage outlet (29) for oil, which corresponds to said second position of the valve body (18, 19).

[c5] 5. Device according to claim 3 wherein said controllable valve (28) consists of an electrically controlled solenoid valve.

[c6] 6. Device according to claim 3 wherein said valve body (18, 19) is arranged in a holder (20) in such a way that a pressure reducing slit is defined at said first position of the valve body

(18, 19).

- [c7] 7. Device according to claim 3 wherein the control valve device (15, 16) comprises a throttle valve (16) with valve devices (24, 25, 26) to trap an oil volume in connection to said means (6; 14) in case of increased oil pressure.
- [c8] 8. Device according to claim 7, wherein said valve devices (24, 25, 26) comprise a ball (24) which, with a ball seat (25), defines a controllable opening for oil, and a spring element (26) which in the case of increased oil pressure influences said ball (24) to be in contact with the ball seat (25).
- [c9] 9. Device according to claim 7, wherein said canal (23) exhibits a first cross-section area, and said controllable outlet (36) exhibits a second cross-section area, wherein the ratio between said first cross-section area and said second cross-section area is within the interval 1-5.
- [c10] 10. Device according to claim 7, wherein said canal (23) exhibits a diameter in the order of size 5-15 mm, and in that said controllable outlet (36) exhibits a diameter in the order of size of 2-10 mm.
- [c11] 11. Device according to claim 7 wherein the dimensions of said controllable outlet (36) are chosen so that there is essentially no time delay obtained when pressurizing and depressurizing in said controllable outlet (36) compared to the

corresponding pressurization and depressurization of said canal (23).

- [c12] 12. Method for engine braking of motor vehicles comprising an internal combustion engine with at least one cylinder, at least one exhaust gas valve at said cylinder, and a rocker arm (4) for activation of said exhaust gas valve, which rocker arm (4) is arranged on a hollow rocker arm shaft (5) and arranged to be influenced by ridges (2a, 2b, 2c) on a camshaft (2), with said method comprising:
- controlling the oil pressure of said rocker arm shaft (5), and increasing the oil pressure in said rocker arm shaft (5) and integrated in said rocker arm (4) for absorbing play between said rocker arm (4) and said exhaust gas valve in the case of increased oil pressure, with at least one of said ridges (2b, 2c) being used for opening the exhaust gas valve with engine braking effect comprises:
- control of a valve (15) which comprises a controllable valve body (18, 19) and a canal (22) between the valve body (18, 19) and the rocker arm shaft (5) which comprises a controllable outlet (36),
- with said control comprising positioning of the valve body in a first position with pressure reducing effect, and a second position without pressure reducing effect.